AMENDMENTS TO THE CLAIMS

1. (Original) An information recording medium having at least two information layers, comprising:

a first information layer including a first recording layer that generates a reversible phase change between the crystalline phase and the amorphous phase by optical means or electrical means; and

a second information layer including a second recording layer that generates a reversible phase change between the crystalline phase and the amorphous phase by optical means or electrical means;

wherein the first recording layer contains Ge, Te and Bi, and

the second recording layer contains Sb and at least one element M1 selected from a group consisting of V, Mn, Ga, Ge, Se, Ag, In, Sn, Te, Pb, Bi and Au.

2. (Original) The information recording medium according to claim 1, wherein the first recording layer further contains Sb.

3. (Currently Amended) The information recording medium according to claim 1 ~~or 2~~, wherein the first recording layer further contains Sn.

4. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-3~~, wherein the first recording layer contains Bi at 1.0 atom % or more.

5. (Original) The information recording medium according to claim 1, wherein the first recording layer is represented by a composition formula $Ge_aBi_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

6. (Original) The information recording medium according to claim 1, wherein the first recording layer is represented by a composition formula $(Ge\text{-}M2)_aBi_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

7. (Original) The information recording medium according to claim 2, wherein the first recording layer is represented by a composition formula $Ge_a(Bi\text{-}Sb)_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

8. (Original) The information recording medium according to claim 2, wherein the first recording layer is represented by a composition formula $(Ge\text{-}M2)_a(Bi\text{-}Sb)_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$).

9. (Original) An information recording medium having at least two information layers, comprising:

a first information layer including a first recording layer that generates a reversible phase change between the crystalline phase and the amorphous phase by optical means or electrical means; and

a second information layer including a second recording layer that generates a reversible phase change between the crystalline phase and the amorphous phase by optical means or electrical means;

wherein the first recording layer contains Ge, Te and Sb, and

the second recording layer contains Sb and at least one element M1 selected from a group consisting of V, Mn, Ga, Ge, Se, Ag, In, Sn, Te, Pb, Bi and Au.

10. (Original) The information recording medium according to claim 9, wherein the first recording layer is represented by a composition formula $Ge_aSb_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

11. (Original) The information recording medium according to claim 9, wherein the first recording layer is represented by a composition formula $(Ge\text{-}M2)_aSb_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

12. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-11~~, wherein the second recording layer is represented by a composition formula Sb_xM1_{100-x}, where $50 \leqq x \leqq 95$ atom %.

13. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-11~~, wherein the second recording layer is represented by a composition formula Sb_yM1_{100-y}, where $0 < y \leqq 20$ atom %.

14. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-11~~, wherein the second recording layer is represented by a composition formula $Ge_a(Bi\text{-}Sb)_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

15. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-11~~, wherein the second recording layer is represented by a composition formula $(Ge\text{-}M2)_a(Bi\text{-}Sb)_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

16. (Original) An information recording medium having at least two information layers, comprising:

a first information layer including a first recording layer that generates a reversible phase change between the crystalline phase and the amorphous phase by optical means or electrical means; and

a second information layer including a second recording layer that generates a reversible phase change between the crystalline phase and the amorphous phase by optical means or electrical means;

wherein both the first recording layer and the second recording layer contain Ge, Te and Bi.

17. (Original) The information recording medium according to claim 16, wherein at least one of the first recording layer and the second recording layer contains Bi at 1.0 atom % or more.

18. (Original) The information recording medium according to claim 16, wherein at least one of the first recording layer and the second recording layer is represented by a composition formula $Ge_aBi_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

19. (Original) The information recording medium according to claim 16, wherein at least one of the first recording layer and the second recording layer is represented by a composition formula $(Ge\text{-}M2)_aBi_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

20. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-19~~, further comprising an interface layer that is provided adjacent to a surface of at least one of the first recording layer and the second recording layer, wherein the interface layer contains at least one composition selected from a group consisting of Ga_2O_3, SnO_2, ZrO_2, HfO_2, Nb_2O_5, Ta_2O_5, SiO_2, Cr_2O_3, Al_2O_3, TiO_2, ZnO, Zr-N, Hf-N, Nb-N, Ta-N, Si-N, Cr-N, Ge-N, Al-N, Ge-Si-N, Ge-Cr-N, YF_3, LaF_3, CeF_3, GdF_3, DyF_3, ErF_3, YbF_3, C and ZnS.

21. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-20~~, wherein the first information layer includes at least a first incident side dielectric layer, a first incident side interface layer, a first recording layer, a first counterincident side interface layer, a first reflection layer and a transmittance adjustment layer in this order.

22. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-21~~, wherein the second information layer includes at least a second incident side dielectric layer, a second incident side interface layer, a second recording layer, a second counterincident side interface layer, a second counterincident side dielectric layer and a second reflection layer in this order.

23. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-22~~, wherein the first information layer is disposed at the optical means side with respect to the second information layer.

24. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-23~~, wherein thickness of the first recording layer is 9 nm or less.

25. (Currently Amended) The information recording medium according to ~~any one of claims~~ claim 1~~-24~~, wherein thickness of the second recording layer is between 6 and 15 nm.

26. (Original) A method for producing an information recording medium having at least two information layers on a substrate, the method comprising the steps of:

forming a first recording layer that generates a phase change; and

forming a second recording layer that generates a phase change;

wherein a sputtering target containing Ge, Te and Bi is used in the first recording layer forming step; and

a sputtering target containing Sb and at least one element M1 selected from a group consisting of V, Mn, Ga, Ge, Se, Ag, In, Sn, Pb, Te, Bi and Au is used in the second recording layer forming step.

27. (Original) The method for producing an information recording medium according to claim 26, wherein the sputtering target that is used in the first recording layer forming step further contains Sb.

28. (Currently Amended) The method for producing an information recording medium according to claim 26 ~~or 27~~, wherein the sputtering target that is used in the first recording layer forming step further contains Sn.

29. (Currently Amended) The method for producing an information recording medium according to ~~any one of claims~~ claim 26 ~~28~~, wherein a sputtering target containing Bi at 0.5 atom % or more is used in the first recording layer forming step.

30. (Original) The method for producing an information recording medium according to claim 26, wherein the first recording layer that is formed by the sputtering target that is used in the first recording layer forming step is represented by a composition formula $Ge_aBi_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

31. (Original) The method for producing an information recording medium according to claim 26, wherein the first recording layer that is formed by the sputtering target that is used in the first recording layer forming step is represented by a composition formula $(Ge\text{-}M2)_aBi_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

32. (Original) The method for producing an information recording medium according to claim 27, wherein the first recording layer that is formed by the sputtering target that is used in the first recording layer forming step is represented by a composition formula $Ge_a(Bi\text{-}Sb)_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

33. (Original) The method for producing an information recording medium according to claim 27, wherein the first recording layer that is formed by the sputtering target that is used in the first recording layer forming step is represented by a composition formula $(Ge\text{-}M2)_a(Bi\text{-}$

$Sb)_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$).

34. (Original) A method for producing an information recording medium that has at least two information layers, the method comprising the steps of:

forming a first recording layer that generates a phase change; and

forming a second recording layer that generates a phase change;

wherein a sputtering target containing Ge, Te and Sb is used in the first recording layer forming step; and

a sputtering target containing Sb and at least one element M1 selected from a group consisting of V, Mn, Ga, Ge, Se, Ag, In, Sn, Pb, Te, Bi and Au is used in the second recording layer forming step.

35. (Original) The method for producing an information recording medium according to claim 34, wherein the first recording layer that is formed by the sputtering target that is used in the first recording layer forming step is represented by a composition formula $Ge_aSb_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

36. (Original) The method for producing an information recording medium according to claim 34, wherein the first recording layer that is formed by the sputtering target that is used in the first recording layer forming step is represented by a composition formula $(Ge\text{-}M2)_aSb_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

37. (Currently Amended) The method for producing an information recording medium according to ~~any one of claims~~ claim 26-~~36~~, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula Sb_xM1_{100-x}, where $50 \leqq x \leqq 95$ atom %.

38. (Currently Amended) The method for producing an information recording medium according to ~~any one of claims~~ claim 26~~-36~~, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula Sb_yM1_{100-y}, where $0 < y \leqq 20$ atom %.

39. (Currently Amended) The method for producing an information recording medium according to ~~any one of claims~~ claim 26~~-36~~, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula $Ge_a(Bi\text{-}Sb)_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

40. (Currently Amended) The method for producing an information recording medium according to ~~any one of claims~~ claim 26~~-36~~, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula $(Ge\text{-}M2)_a(Bi\text{-}Sb)_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

41. (Original) A method for producing an information recording medium that has at least two information layers, the method comprising the steps of:

forming a first recording layer that generates a phase change; and

forming a second recording layer that generates a phase change;

wherein a sputtering target containing Ge, Te and Bi is used in both the first recording layer forming step and the second recording layer forming step.

42. (Original) The method for producing an information recording medium according to claim 41, wherein a sputtering target containing Bi at 0.5 atom % or more is used in the second recording layer forming step.

43. (Original) The method for producing an information recording medium according to claim 41, wherein the second recording layer that is formed by the sputtering target that is used

in the second recording layer forming step is represented by a composition formula $Ge_aBi_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

44. (Original) The method for producing an information recording medium according to claim 41, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula $(Ge\text{-}M2)_aBi_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

45. (New) The information recording medium according to claim 9, wherein the second recording layer is represented by a composition formula Sb_xM1_{100-x}, where $50 \leqq x \leqq 95$ atom %.

46. (New) The information recording medium according to claim 9, wherein the second recording layer is represented by a composition formula Sb_yM1_{100-y}, where $0 < y \leqq 20$ atom %.

47. (New) The information recording medium according to claim 9, wherein the second recording layer is represented by a composition formula $Ge_a(Bi\text{-}Sb)_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

48. (New) The information recording medium according to claim 9, wherein the second recording layer is represented by a composition formula $(Ge\text{-}M2)_a(Bi\text{-}Sb)_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

49. (New) The information recording medium according to claim 9, further comprising an interface layer that is provided adjacent to a surface of at least one of the first recording layer and the second recording layer, wherein the interface layer contains at least one composition selected from a group consisting of Ga_2O_3, SnO_2, ZrO_2, HfO_2, Nb_2O_5, Ta_2O_5, SiO_2, Cr_2O_3, Al_2O_3, TiO_2, ZnO, Zr-N, Hf-N, Nb-N, Ta-N, Si-N, Cr-N, Ge-N, Al-N, Ge-Si-N, Ge-Cr-N, YF_3, LaF_3, CeF_3, GdF_3, DyF_3, ErF_3, YbF_3, C and ZnS.

50. (New) The information recording medium according to claim 16, further comprising an interface layer that is provided adjacent to a surface of at least one of the first recording layer and the second recording layer, wherein the interface layer contains at least one composition selected from a group consisting of Ga_2O_3, SnO_2, ZrO_2, HfO_2, Nb_2O_5, Ta_2O_5, SiO_2, Cr_2O_3, Al_2O_3, TiO_2, ZnO, Zr-N, Hf-N, Nb-N, Ta-N, Si-N, Cr-N, Ge-N, Al-N, Ge-Si-N, Ge-Cr-N, YF_3, LaF_3, CeF_3, GdF_3, DyF_3, ErF_3, YbF_3, C and ZnS.

51. (New) The information recording medium according to claim 9, wherein the first information layer includes at least a first incident side dielectric layer, a first incident side interface layer, a first recording layer, a first counterincident side interface layer, a first reflection layer and a transmittance adjustment layer in this order.

52. (New) The information recording medium according to claim 16, wherein the first information layer includes at least a first incident side dielectric layer, a first incident side interface layer, a first recording layer, a first counterincident side interface layer, a first reflection layer and a transmittance adjustment layer in this order.

53. (New) The information recording medium according to claim 9, wherein the second information layer includes at least a second incident side dielectric layer, a second incident side interface layer, a second recording layer, a second counterincident side interface layer, a second counterincident side dielectric layer and a second reflection layer in this order.

54. (New) The information recording medium according to claim 16, wherein the second information layer includes at least a second incident side dielectric layer, a second incident side interface layer, a second recording layer, a second counterincident side interface layer, a second counterincident side dielectric layer and a second reflection layer in this order.

55. (New) The information recording medium according to claim 9, wherein the first information layer is disposed at the optical means side with respect to the second information layer.

56. (New) The information recording medium according to claim 16, wherein the first information layer is disposed at the optical means side with respect to the second information layer.

57. (New) The information recording medium according to claim 9, wherein thickness of the first recording layer is 9 nm or less.

58. (New) The information recording medium according to claim 16, wherein thickness of the first recording layer is 9 nm or less.

59. (New) The information recording medium according to claim 9, wherein thickness of the second recording layer is between 6 and 15 nm.

60. (New) The information recording medium according to claim 16, wherein thickness of the second recording layer is between 6 and 15 nm.

61. (New) The method for producing an information recording medium according to claim 34, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula Sb_xM1_{100-x}, where $50 \leqq x \leqq 95$ atom %.

62. (New) The method for producing an information recording medium according to claim 34, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula Sb_yM1_{100-y}, where $0 < y \leqq 20$ atom %.

63. (New) The method for producing an information recording medium according to claim 34, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula $Ge_a(Bi\text{-}Sb)_bTe_{3+a}$, where $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.

64. (New) The method for producing an information recording medium according to claim 34, wherein the second recording layer that is formed by the sputtering target that is used in the second recording layer forming step is represented by a composition formula $(Ge\text{-}M2)_a(Bi\text{-}Sb)_bTe_{3+a}$, where M2 is at least one element selected from a group consisting of Sn and Pb, and $0 < a \leqq 60$ and $1.5 \leqq b \leqq 7$.